ABSTRACT OF THE DISCLOSURE

Thiol-containing peptides can be radiolabeled with fluorine-18 (F-18) by reacting a peptide comprising a free thiol group with an F-18-bound labelling reagent which also has a group that is reactive with thiols. The resulting F-18-labeled peptides may be targeted to a tissue of interest using bispecific antibodies or bispecific antibody fragments having one arm specific for the F-18-labeled peptide or a low molecular weight hapten conjugated to the F-18-labeled peptide, and another arm specific to the targeted tissue. The targeted tissue is subsequently visualized by clinical positron emission tomography.